

Thingy, LLC
Experimental Application

Exhibit information: Narrative Statement

We hereby request an experimental license for testing the use of satellite-based IoT-Gateways, provided by UK company Lacuna Space Ltd, for our ground-based IoT applications. Thingy provides solutions for various fields in low-cost + low-power telecommunication systems, including LPWAN technologies. For remote device locations, a satellite-based gateway would provide a perfect extension, i.e. in the field of wild fire monitoring or weather monitoring.

To fit our business model, we need a satellite service in the same frequency range as our “traditional” terrestrial service (i.e. 902-928 MHz). We therefore collaborate with Lacuna Space and request to test their satellite gateway in various locations, using up to 200 ground devices and one satellite. The ground devices are development kits that will transmit in line with Title 47 CFR Part 15 regulations (up to 0 dBW with max 6 dBi gain). The satellite is a 3U cubesat in Low Earth Orbit (550km altitude, sun-synchronous). It has been filed by Lacuna Space under the name LS-4. Transmissions to the satellite will be possible up to 5 times per day. Transmissions from satellite to the ground will be only conducted to update the devices about when the satellite is in view. This will allow the devices to only transmit when the satellite is available. In order to consider the use of satellite-based gateways on a large scale, the gateway’s capacity as well as its performance in different environments has to be investigated. This explains the requirement and plan to test up to 200 ground devices in different locations.

The whole experiment will be conducted on a non-interference, non-protection bases. We will use polite spectrum access techniques to not harmfully interfere with existing terrestrial applications. The ground devices will use antennas that are quasi-omnidirectional while reducing emissions in the horizontal plane.

This license request does not include the forwarding of collected data from the satellite gateway back to us. For the data forwarding, Lacuna Space provides other channels to us. The tests in 902-928 MHz will be solely conducted for device-to-gateway and gateway-to-device transmissions.